

Phospho-FRAP1(T2446) Antibody
Affinity Purified Rabbit Polyclonal Antibody (Pab)
Catalog # AP3433a

Specification

Phospho-FRAP1(T2446) Antibody - Product Information

Application	DB,E
Primary Accession	P42345
Other Accession	P42346 , Q9JLN9
Reactivity	Human
Predicted	Mouse, Rat
Host	Rabbit
Clonality	Polyclonal
Isotype	Rabbit IgG

Phospho-FRAP1(T2446) Antibody - Additional Information

Gene ID 2475

Other Names

Serine/threonine-protein kinase mTOR, FK506-binding protein 12-rapamycin complex-associated protein 1, FKBP12-rapamycin complex-associated protein, Mammalian target of rapamycin, mTOR, Mechanistic target of rapamycin, Rapamycin and FKBP12 target 1, Rapamycin target protein 1, MTOR, FRAP, FRAP1, FRAP2, RAFT1, RAPT1

Target/Specificity

This FRAP1 Antibody is generated from rabbits immunized with a KLH conjugated synthetic phosphopeptide corresponding to amino acid residues surrounding T2446 of human FRAP1.

Dilution

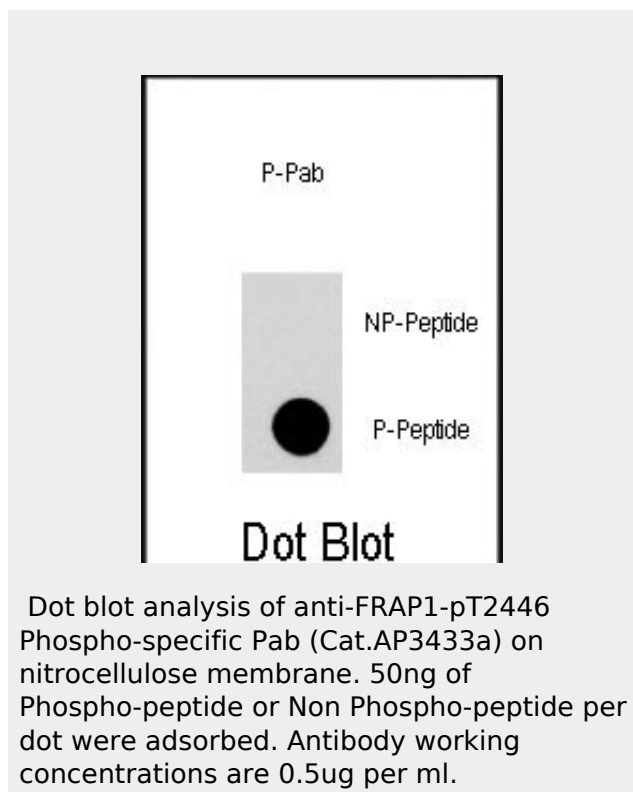
DB~~1:500

Format

Purified polyclonal antibody supplied in PBS with 0.09% (W/V) sodium azide. This antibody is purified through a protein A column, followed by peptide affinity purification.

Storage

Maintain refrigerated at 2-8°C for up to 2



Phospho-FRAP1(T2446) Antibody - Background

FRAP1 belongs to a family of phosphatidylinositol kinase-related kinases. These kinases mediate cellular responses to stresses such as DNA damage and nutrient deprivation. This protein acts as the target for the cell-cycle arrest and immunosuppressive effects of the FKBP12-rapamycin complex. FRAP1 is a part of the TORC2 complex which plays a critical role in AKT1 Ser-473 phosphorylation, and may modulate the phosphorylation of PKCA and regulate actin cytoskeleton organization.

Phospho-FRAP1(T2446) Antibody - References

Dowling,R.J., Cancer Res. 67 (22), 10804-10812 (2007)
Bai,X., Science 318 (5852), 977-980 (2007)

weeks. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.

Precautions

Phospho-FRAP1(T2446) Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Zhou,J., Proc. Natl. Acad. Sci. U.S.A. 104 (41), 16158-16163 (2007)
Radulovic,S., J BUON 12 SUPPL 1, S151-S162 (2007)

Phospho-FRAP1(T2446) Antibody - Protein Information

Name MTOR

Synonyms FRAP, FRAP1, FRAP2, RAFT1, RAPT1

Function

Serine/threonine protein kinase which is a central regulator of cellular metabolism, growth and survival in response to hormones, growth factors, nutrients, energy and stress signals (PubMed:12087098, PubMed:12150925, PubMed:12150926, PubMed:12231510, PubMed:12718876, PubMed:14651849, PubMed:15268862, PubMed:15467718, PubMed:15545625, PubMed:15718470, PubMed:18497260, PubMed:<a href="http://www.uniprot.org/ci

tations/18762023"
target="_blank">18762023,
PubMed:<a href="http://www.uniprot.org/ci
tations/18925875"
target="_blank">18925875,
PubMed:<a href="http://www.uniprot.org/ci
tations/20516213"
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PubMed:<a href="http://www.uniprot.org/ci
tations/20537536"
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PubMed:<a href="http://www.uniprot.org/ci
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PubMed:<a href="http://www.uniprot.org/ci
tations/23429703"
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PubMed:<a href="http://www.uniprot.org/ci
tations/23429704"
target="_blank">23429704,
PubMed:<a href="http://www.uniprot.org/ci
tations/25799227"
target="_blank">25799227,
PubMed:<a href="http://www.uniprot.org/ci
tations/26018084"
target="_blank">26018084). MTOR
directly or indirectly regulates the
phosphorylation of at least 800 proteins.
Functions as part of 2 structurally and
functionally distinct signaling complexes
mTORC1 and mTORC2 (mTOR complex 1
and 2) (PubMed:<a href="http://www.unipr
ot.org/citations/15268862"
target="_blank">15268862,
PubMed:<a href="http://www.uniprot.org/ci
tations/15467718"
target="_blank">15467718,
PubMed:<a href="http://www.uniprot.org/ci
tations/18925875"
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PubMed:<a href="http://www.uniprot.org/ci
tations/18497260"
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PubMed:<a href="http://www.uniprot.org/ci
tations/20516213"
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PubMed:<a href="http://www.uniprot.org/ci
tations/21576368"
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PubMed:<a href="http://www.uniprot.org/ci
tations/21659604"
target="_blank">21659604,
PubMed:<a href="http://www.uniprot.org/ci
tations/23429704"
target="_blank">23429704).
Activated mTORC1 up-regulates protein
synthesis by phosphorylating key regulators

of mRNA translation and ribosome synthesis
(PubMed:<a href="http://www.uniprot.org/citations/12087098"
target="_blank">12087098,
PubMed:<a href="http://www.uniprot.org/citations/12150925"
target="_blank">12150925,
PubMed:<a href="http://www.uniprot.org/citations/12150926"
target="_blank">12150926,
PubMed:<a href="http://www.uniprot.org/citations/12231510"
target="_blank">12231510,
PubMed:<a href="http://www.uniprot.org/citations/12718876"
target="_blank">12718876,
PubMed:<a href="http://www.uniprot.org/citations/14651849"
target="_blank">14651849,
PubMed:<a href="http://www.uniprot.org/citations/15268862"
target="_blank">15268862,
PubMed:<a href="http://www.uniprot.org/citations/15467718"
target="_blank">15467718,
PubMed:<a href="http://www.uniprot.org/citations/15545625"
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PubMed:<a href="http://www.uniprot.org/citations/18762023"
target="_blank">18762023,
PubMed:<a href="http://www.uniprot.org/citations/18925875"
target="_blank">18925875,
PubMed:<a href="http://www.uniprot.org/citations/20516213"
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PubMed:<a href="http://www.uniprot.org/citations/20537536"
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PubMed:<a href="http://www.uniprot.org/citations/21659604"
target="_blank">21659604,
PubMed:<a href="http://www.uniprot.org/citations/23429703"
target="_blank">23429703,
PubMed:<a href="http://www.uniprot.org/citations/23429704"
target="_blank">23429704,
PubMed:<a href="http://www.uniprot.org/citations/25799227"

target="_blank">25799227,
PubMed:<a href="http://www.uniprot.org/citations/26018084"
target="_blank">26018084). This includes phosphorylation of EIF4EBP1 and release of its inhibition toward the elongation initiation factor 4E (eIF4E) (By similarity). Moreover, phosphorylates and activates RPS6KB1 and RPS6KB2 that promote protein synthesis by modulating the activity of their downstream targets including ribosomal protein S6, eukaryotic translation initiation factor EIF4B, and the inhibitor of translation initiation PDCD4 (PubMed:<a href="http://www.uniprot.org/citations/12150925"
target="_blank">12150925,
PubMed:<a href="http://www.uniprot.org/citations/12087098"
target="_blank">12087098,
PubMed:<a href="http://www.uniprot.org/citations/18925875"
target="_blank">18925875). This also includes mTORC1 signaling cascade controlling the MiT/TFE factors TFEB and TFE3: in the presence of nutrients, mediates phosphorylation of TFEB and TFE3, promoting their cytosolic retention and inactivation (PubMed:<a href="http://www.uniprot.org/citations/22576015"
target="_blank">22576015,
PubMed:<a href="http://www.uniprot.org/citations/22343943"
target="_blank">22343943,
PubMed:<a href="http://www.uniprot.org/citations/22692423"
target="_blank">22692423). Upon starvation or lysosomal stress, inhibition of mTORC1 induces dephosphorylation and nuclear translocation of TFEB and TFE3, promoting their transcription factor activity (PubMed:<a href="http://www.uniprot.org/citations/22576015"
target="_blank">22576015,
PubMed:<a href="http://www.uniprot.org/citations/22343943"
target="_blank">22343943,
PubMed:<a href="http://www.uniprot.org/citations/22692423"
target="_blank">22692423). Stimulates the pyrimidine biosynthesis pathway, both by acute regulation through RPS6KB1-mediated phosphorylation of the biosynthetic enzyme CAD, and delayed regulation, through transcriptional enhancement of the pentose phosphate pathway which produces

5-phosphoribosyl-1- pyrophosphate (PRPP), an allosteric activator of CAD at a later step in synthesis, this function is dependent on the mTORC1 complex (PubMed:23429704, PubMed:23429703). Regulates ribosome synthesis by activating RNA polymerase III-dependent transcription through phosphorylation and inhibition of MAF1 an RNA polymerase III-repressor (PubMed:20516213). In parallel to protein synthesis, also regulates lipid synthesis through SREBF1/SREBP1 and LPIN1 (By similarity). To maintain energy homeostasis mTORC1 may also regulate mitochondrial biogenesis through regulation of PPARGC1A (By similarity). mTORC1 also negatively regulates autophagy through phosphorylation of ULK1 (By similarity). Under nutrient sufficiency, phosphorylates ULK1 at 'Ser- 758', disrupting the interaction with AMPK and preventing activation of ULK1 (By similarity). Also prevents autophagy through phosphorylation of the autophagy inhibitor DAP (PubMed:20537536). Also prevents autophagy by phosphorylating RUBCNL/Pacer under nutrient-rich conditions (PubMed:30704899). mTORC1 exerts a feedback control on upstream growth factor signaling that includes phosphorylation and activation of GRB10 a INSR-dependent signaling suppressor (PubMed:21659604). Among other potential targets mTORC1 may phosphorylate CLIP1 and regulate microtubules (PubMed:12231510). As part of the mTORC2 complex MTOR may regulate other cellular processes including survival and organization of the cytoskeleton (PubMed:15268862, PubMed:<a href="http://www.uniprot.org/ci

tations/15467718" target="_blank">15467718). Plays a critical role in the phosphorylation at 'Ser-473' of AKT1, a pro-survival effector of phosphoinositide 3-kinase, facilitating its activation by PDK1 (PubMed:15718470). mTORC2 may regulate the actin cytoskeleton, through phosphorylation of PRKCA, PXN and activation of the Rho-type guanine nucleotide exchange factors RHOA and RAC1A or RAC1B (PubMed:15268862). mTORC2 also regulates the phosphorylation of SGK1 at 'Ser-422' (PubMed:18925875). Regulates osteoclastogenesis by adjusting the expression of CEBPB isoforms (By similarity). Plays an important regulatory role in the circadian clock function; regulates period length and rhythm amplitude of the suprachiasmatic nucleus (SCN) and liver clocks (By similarity). Phosphorylates SQSTM1, promoting interaction between SQSTM1 and KEAP1 and subsequent inactivation of the BCR(KEAP1) complex (By similarity).

Cellular Location

Endoplasmic reticulum membrane; Peripheral membrane protein; Cytoplasmic side. Golgi apparatus membrane; Peripheral membrane protein; Cytoplasmic side. Mitochondrion outer membrane; Peripheral membrane protein; Cytoplasmic side. Lysosome. Cytoplasm. Nucleus, PML body {ECO:0000250|UniProtKB:Q9JLN9}. Microsome membrane. Lysosome membrane. Cytoplasmic vesicle, phagosome. Note=Shuttles between cytoplasm and nucleus. Accumulates in the nucleus in response to hypoxia (By similarity). Targeting to lysosomes depends on amino acid availability and RRAGA and RRAGB (PubMed:18497260, PubMed:20381137). Lysosome targeting also depends on interaction with MEAK7. Translocates to the lysosome membrane in the presence of TM4SF5 (PubMed:30956113) {ECO:0000250|UniProtKB:Q9JLN9, ECO:0000269|PubMed:18497260, ECO:0000269|PubMed:20381137, ECO:0000269|PubMed:29750193,

ECO:0000269|PubMed:30956113}

Tissue Location

Expressed in numerous tissues, with highest levels in testis.

Phospho-FRAP1(T2446) Antibody - Protocols

Provided below are standard protocols that you may find useful for product applications.

- [Western Blot](#)
- [Blocking Peptides](#)
- [Dot Blot](#)
- [Immunohistochemistry](#)
- [Immunofluorescence](#)
- [Immunoprecipitation](#)
- [Flow Cytometry](#)
- [Cell Culture](#)

Phospho-FRAP1(T2446) Antibody - Citations

- [Exogenous NAD blocks cardiac hypertrophic response via activation of the SIRT3-LKB1-AMP-activated kinase pathway.](#)